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FISCHER, P.-H., DUVAL, M. & RAFFY, A. 1933. Études sur les échanges respiratoires des littorines. — *Archs Zool. exp. gén.* 74: 627–634.

KOHN, A. J. 1960a. Ecological notes on *Conus* (Mollusca: Gastropoda) in the Trincomalee region of Ceylon. — *Ann. Mag. nat. Hist.* (13) 2: 309–320.

KOHN, A. J. 1960b. Spawning behaviour, egg masses and larval development in *Conus* from the Indian Ocean. — *Bull. Bingham oceanogr. Coll.* 17 (4): 1–51.

THIELE, J. 1910. Mollusca: B. Polyplacophora, Gastropoda marina, Bivalvia. In: SCHULTZE, L. *Zoologische und anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Süd-Afrika* 4: 269–270. Jena: Fischer. — *Denkschr. med.-naturw. Ges. Jena* 16: 269–270.

(continued inside back cover)

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YABEICERAS (CONIACIAN AMMONITE) FROM THE
ALPHARD GROUP OFF THE SOUTHERN
CAPE COAST

By

H. C. KLINGER, W. J. KENNEDY & W. G. SIESSER

Cape Town

Kaapstad

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(With 4 figures)

[MS accepted 30 October 1975]

ABSTRACT

During dredging operations off the southern Cape coast a bored concretion containing a specimen of the ammonite *Yabecerases manasoense* Collignon was recovered. The species had been previously recorded only from the Coniacian of Madagascar and Japan; the occurrence extends the geographic range of the species and provides reliable dating for the outcropping offshore Mesozoic Alaphard Group of sediments of the area.

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INTRODUCTION

During dredging operations off the southern Cape coast, undertaken by the Marine Geoscience Unit of the University of Cape Town, a concretion containing an ammonite was brought to the surface at 35.06S, 20.32E from a depth of 110 metres. The specimen was identified as belonging to the genus *Yabecerases*, thus far only described from the Coniacian stage of the Upper Cretaceous of Madagascar and Japan. Apart from adding to our knowledge of the geographical distribution of the genus, this record permits a precise dating of the offshore Alaphard Group of sediments in the area. The only other recorded Mesozoic ammonite from the South African offshore is an *Eubaculites* sp. recorded by Dingle (1973: 10), although occurrences of Tertiary nautiloids were reported by Cayeux (1934) and Miller & Furnish (1956).

MATERIAL

The concretion containing the ammonite consists of a dark greyish-green, fine-grained quartz siltstone, with a calcite cement. The ammonite itself is

partially filled with sparry calcite, but the greater part is preserved as an internal mould, consisting of the same material as the concretion. Part of the original aragonitic shell has been preserved.

That part of the concretion and the ammonite which was exposed at the sediment/water interface is pitted with two types of borings of Recent organisms. The first consists of large (up to 1 cm in diameter) flask-like crypts, internally smooth, with a constricted aperture. The second is much smaller, 2 to 3 mm across and irregular in habit. Both types of borings show cross-cutting relationships. The larger may be ascribed to lithodomous bivalves, the smaller to polychaete worms, and perhaps other organisms. Apart from a few encrusting ectoprocts (bryozoans) and serpulids, most of which occur within the borings, no other epizoans are present.

SYSTEMATIC PALAEOLOGY

Family **Collignoniceratidae** Wright & Wright, 1951

Subfamily Barroisiceratinae Basse, 1947

Genus *Yabeiceras* Tokunaga & Shimizu, 1926

(= *Eboroceras* Basse, 1947)

Type species

Yabeiceras orientale Tokunaga & Shimizu, 1926 by original designation.

Discussion

Matsumoto *et al.* (1964; Matsumoto 1969) have provided recent reviews of *Yabeiceras* and demonstrated that it should be referred to the Barroisiceratinae rather than to the Peroniceratinae, as in the current *Treatise* (Wright 1957: L429).

Yabeiceras is an uncommon genus represented by four species in Japan: *Y. orientale* Tokunaga & Shimizu, *Y. kotoi* Tokunaga & Shimizu, *Y. himuroi* Tokunaga & Shimizu, and *Y. manasoense* Collignon, whilst Basse (1946) and Collignon (1965) record six species from Madagascar: *Y. magnamtuberculatum* Basse, *Y. manasoense* Collignon, *Y. menabense* Collignon, *Y. costatum* Collignon and *Y. ankinatsyense* Collignon. Undescribed species also occur in Zululand (Kennedy & Klinger 1975). All records of *Yabeiceras* are of either Lower or Middle Coniacian age.

Yabeiceras manasoense Collignon, 1965

Figs 1-4

Yabeiceras manasoense Collignon, 1965: 84, pl. 452 (fig. 1839).
Matsumoto 1971: 144, pl. 24 (55) (fig. 2), text-fig. 9 (110).

Holotype

The specimen figures by Collignon (1965, pl. 452 (fig. 1839)) from the Coniacian of Manaso (Betioky), Madagascar.

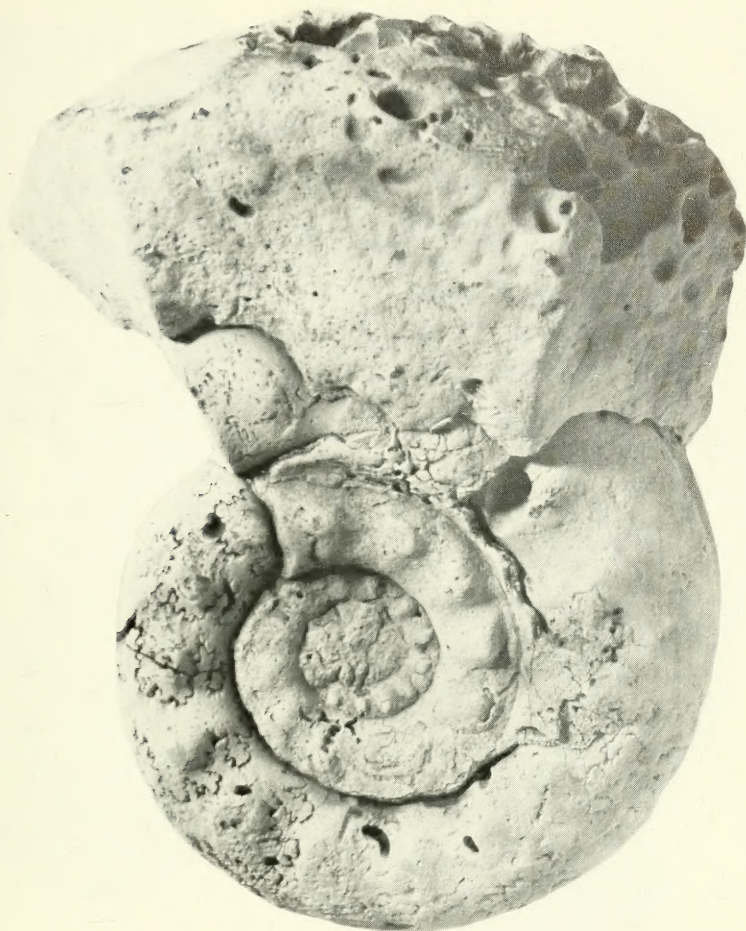


Fig. 1. *Yabeiceras manasoense* specimen 4492 left lateral view $\times 1$.

Material

Sample 4492 from the Alphard Group at 35.06S, 20.32E, and housed with the Marine Geoscience Unit, University of Cape Town collections.

Description

The specimen comprises just over two whorls of phragmocone and an incomplete body chamber of slightly more than a third of a whorl. The innermost whorls up to a diameter of 10 mm are not preserved. Coiling is very evolute with an umbilical diameter of 54,6 per cent of the total diameter. The outer whorls embrace only slightly, covering less than 10 per cent of the previous

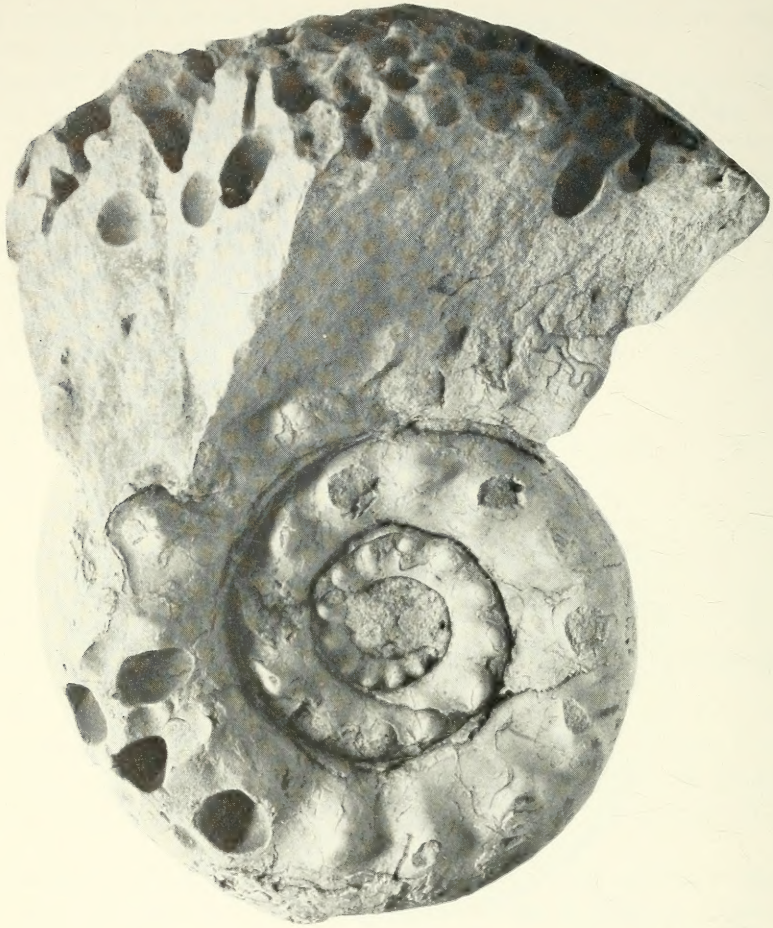


Fig. 2. *Yabeiceras manasoense* specimen 4492 right lateral view $\times 1$.

whorl. The whorl section of the body chamber is coronate, with maximum breadth across the dorsal third of the flanks. The venter is ornamented by a low broad keel, bounded on either side by two equally broad depressions, in turn flanked by low lateral keels.

Flank ornament consists of a single row of tubercles numbering sixteen on the outer whorl. On the inner whorls the tubercles are conical to pointed, and are housed in notches in the umbilical wall of the succeeding whorl. With increasing diameter the tubercles become more bullate and migrate progressively from the umbilical suture towards the midflank, and eventually to the dorsal third of the flanks. Ornament declines markedly on the body chamber.



Fig. 3. *Yabeiceras manasoense* specimen 4492. A. Ventral view $\times 1$.
B. Dorsal view $\times 1$.

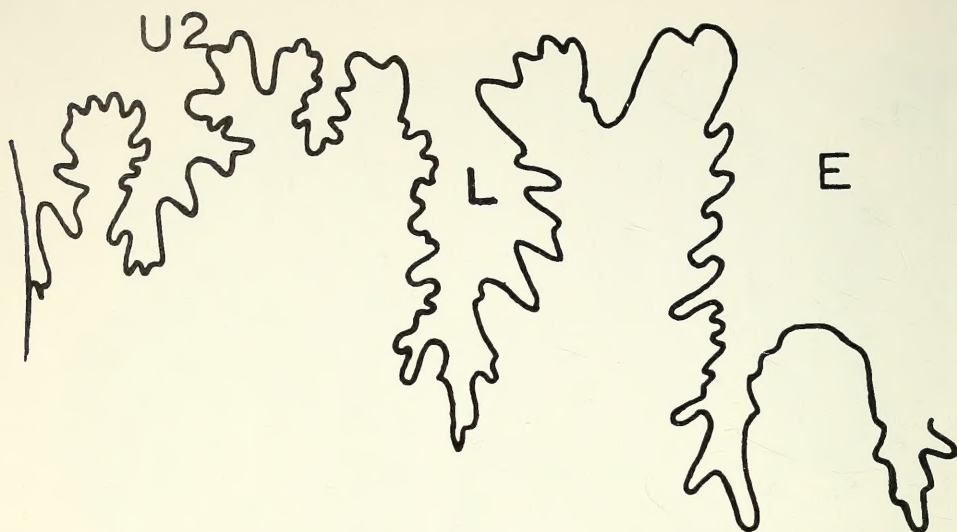


Fig. 4. External suture line of *Yabeiceras manasoense* Collignon, specimen 4492 at whorl breadth of 30 mm \times 3.

Dimensions

| Specimen | D | Wb | Wh | Wb/Wh | U |
|----------------------------|------|----------|------------|-------|------------|
| 4492 | 92,5 | 34(36,9) | 21,5(23,2) | 1,5 | 50,5(54,6) |
| Holotype | 105 | 37(35) | 24(23) | 1,5 | 51(49) |
| (Collignon 1965) | | | | | |
| Matsumoto 1971 . . . | 149 | 38,6(26) | 43,2(29) | 0,9 | 72,4(48) |
| (Muramoto coll. Ob-S-6-p1) | | | | | |

Discussion

Differences between the nine described species of *Yabeiceras* are slight, and well within the range of variation documented in related ammonite groups. Study of large populations will probably show that most of the described forms are variants of one or two variable species. Available material is inadequate for any constructive discussion of this point, however. The present specimen compares most closely with *Yabeiceras manasoense*, showing a similar whorl section and ornament which declines on the outer whorls. Dimensions are closely similar to that of the holotype. The larger specimen figured and described by Matsumoto (1971: 144, pl. 24 (fig. 2)) is virtually identical at similar diameters, and shows further development of the declining ornament seen on the body chamber of our specimen.

Yabeiceras bituberculatum Collignon (1965: 821, pl. 451 (fig. 1836), pl. 452 (fig. 1838)) is readily distinguished on the basis of the presence of ventral tubercles when young, whilst Collignon's figure shows what appears to be a

siphonal row of elongate clavi rather than a continuous keel at this diameter, whilst the adult body chamber is remarkably smooth and constricted.

YabEICeras magnumbilitatum (Basse) (1946: 73, fig. 2, pl. 2 (figs 2a-b); Collignon 1965: 82, pl. 451 (fig. 1836)) has larger, coarser umbilical nodes, a contracted, virtually smooth body chamber, and far more involute coiling ($U = 35$ per cent of diameter).

Y. costatum Collignon (1965: 87, pl. 454 (fig. 1841)) is a costate, rather than tuberculate species, with 26–28 ribs per whorl, as is *Y. ankinatsyense* Collignon (1965: 87, pl. 454 (fig. 1842)).

Y. menabense Collignon (1965: 86, pl. 453 (fig. 1840)) is characterized by a very depressed whorl section, evolute coiling and 12–15 massive tubercles per whorl.

Y. magnumbilitatum, *Y. bituberculatum* and *Y. mansoense* are contemporaries, as are *Y. menabense*, *Y. costatum* and *Y. ankinatsyense*. It is difficult to see these as more than one, or perhaps two species, whilst the *Y. costatum* group is scarcely distinguishable from the type species, *Y. orientale* or the costate *Y. himuroi* and *Y. kotoi* (Tokunaga & Shimizu 1926).

Occurrence:

Y. mansoense is recorded from the Lower to Middle Coniacian of Japan and the Middle Coniacian *Kossmaticeras theobaldianum*/*Barroisiceras onilahyense* Zone of Madagascar. In Zululand related, but as yet undescribed, forms occur in the St. Lucia Formation in the second division of the Coniacian, associated with *Forresteria alluaudi* (Boule, Lemoine & Thevenin), *Proplacenticeras* spp. and other forms, again suggesting an early Coniacian age.

ACKNOWLEDGEMENTS

We should like to express our thanks to the Marine Geoscience Unit for placing the material and data at our disposal. Thanks are due to Mr Neville Eden for the photography.

REFERENCES

- BASSE, E. 1946. Sur deux ammonites nouvelles du Coniacien du Sud-ouest de Madagascar: *Subbarroisiceras* n.g. *mahafalense* n. sp. et *Eboroceras* n.g. *magnumbilitatum* n. sp.—*Bull. Soc. géol. Fr.*, 5 ser, **16**: 71–76, pl. 2.
- BASSE, E. 1947. Les peuplements malgachés de *Barroisiceras*.—*Ann. Paléont.* **33**: 99–178, pl. 1(7)–9(15).
- CAYEUX, L. 1934. The phosphatic nodules of the Agulhas Bank.—*Ann. S. Afr. Mus.* **31**: 105–135, pls 32–35.
- COLLIGNON, M. 1965. *Atlas des fossiles caractéristiques de Madagascar (Ammonites)*. 13 (Coniacien). Tananarive: Service Géologique.
- DINGLE, R. V. 1973. Post-Palaeozoic stratigraphy of the eastern Agulhas Bank, South African continental margin.—*Mar. Geol.* **15**: 1–23.
- KENNEDY, W. J. & KLINGER, H. C. 1975. Cretaceous faunas from Zululand and Natal, South Africa. Introduction, stratigraphy.—*Bull. Br. Mus. nat. Hist. (Geol.)* **25**: 265–315.

- MATSUMOTO, T. 1969. A Monograph of the Collignoniceratidae from Hokkaido. Part III. (Studies of the Cretaceous Ammonites from Hokkaido and Saghalien—xx.)—*Mem. Fac. Sci. Kyushu Univ.* (D) **19**: 297–330.
- MATSUMOTO, T. 1971. A Monograph of the Collignoniceratidae from Japan. Part V. (Studies of the Cretaceous Ammonites from Hokkaido and Saghalien—xxiii.)—*Mem. Fac. Sci. Kyushu Univ.* (D) **21**: 129–162.
- MATSUMOTO, T., OBATA, I., MAEDA, S. & SATO, T. 1964. *Yabeiceras* (Cretaceous ammonites) from Futaba, Northeast Japan.—*Trans. Proc. palaeont. Soc. Japan* (N.s.) **55**: 322–331.
- MILLER, A. K. & FURNISH, W. M. 1956. Tertiary Nautiloids dredged near Cape of Good Hope.—*Ann. S. Afr. Mus.* **42**: 327–328.
- TOKUNAGA, S. & SHIMIZU, S. 1926. The Cretaceous Formation of Futaba in Iwaki and its fossils.—*J. Fac. Sci. Tokyo Univ.* (2) **1**: 181–212.
- WRIGHT, C. W. 1957. In R. C. MOORE ed. *Treatise on invertebrate paleontology* Pt I, Mollusca, Cephalopoda, Ammonoidea. Lawrence: University of Kansas Press.
- WRIGHT, C. W. & WRIGHT, E. V. 1951. *A survey of the cephalopoda of the Chalk of Great Britain*. London: Palaeontographical Society.

6. SYSTEMATIC papers must conform with the *International code of zoological nomenclature* (particularly Articles 22 and 51).

Names of new taxa, combinations, synonyms, etc., when used for the first time, must be followed by the appropriate Latin (not English) abbreviation, e.g. gen. n., sp. n., comb. n., syn. n., etc.

An author's name when cited must follow the name of the taxon without intervening punctuation and not be abbreviated; if the year is added, a comma must separate author's name and year. The author's name (and date, if cited) must be placed in parentheses if a species or subspecies is transferred from its original genus. The name of a subsequent user of a scientific name must be separated from the scientific name by a colon.

Synonymy arrangement should be according to chronology of names, i.e. all published scientific names by which the species previously has been designated are listed in chronological order, with all references to that name following in chronological order, e.g.:

Family Nuculanidae

Nuculana (*Lembulus*) *bicuspidata* (Gould, 1845)

Figs 14–15A

Nucula (*Leda*) *bicuspidata* Gould, 1845: 37.

Leda plicifera A. Adams, 1856: 50.

Laeda bicuspidata Hanley, 1859: 118, pl. 228 (fig. 73). Sowerby, 1871: pl. 2 (figs 8a–b).

Nucula largillierii Philippi, 1861: 87.

Leda bicuspidata: Nickles, 1950: 163, fig. 301; 1955: 110. Barnard, 1964: 234, figs 8–9.

Note punctuation in the above example:

comma separates author's name and year

semicolon separates more than one reference by the same author

full stop separates references by different authors

figures of plates are enclosed in parentheses to distinguish them from text-figures

dash, not comma, separates consecutive numbers

Synonymy arrangement according to chronology of bibliographic references, whereby the year is placed in front of each entry, and the synonym repeated in full for each entry, is not acceptable.

In describing new species, one specimen must be designated as the holotype; other specimens mentioned in the original description are to be designated paratypes; additional material not regarded as paratypes should be listed separately. The complete data (registration number, depository, description of specimen, locality, collector, date) of the holotype and paratypes must be recorded, e.g.:

Holotype

SAM–A13535 in the South African Museum, Cape Town. Adult female from mid-tide region, King's Beach, Port Elizabeth (33.51S, 25.39E), collected by A. Smith, 15 January 1973.

Note standard form of writing South African Museum registration numbers and of date.

7. SPECIAL HOUSE RULES

Capital initial letters

- (a) The Figures, Maps and Tables of the paper when referred to in the text
e.g. '... the Figure depicting *C. namacolus* ...'
 '... in *C. namacolus* (Fig. 10) ...'

- (b) The prefixes of prefixed surnames in all languages, when used in the text, if not preceded by initials or full names
e.g. Du Toit but A. L. du Toit
 Von Huene but F. von Huene

- (c) Scientific names, but not their vernacular derivatives
e.g. Therocephalia, but therocephalian

Punctuation should be loose, omitting all not strictly necessary

Reference to the author should be expressed in the third person

Roman numerals should be converted to arabic, except when forming part of the title of a book or article, such as

'Revision of the Crustacea. Part VIII. The Amphipoda.'

Specific name must not stand alone, but be preceded by the generic name or its abbreviation to initial capital letter, provided the same generic name is used consecutively.



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